REMARKS

By virtue of the present amendment, claims 35 to 38 have been added to the application. Those claims, as will be discussed in greater detail below, correspond exactly to claims 1, 2, 5, 19 and 20 of U.S. Patent No. 6,132,587, a copy of which is attached. Specifically, claim 35 is an exact copy of claim 1 of the '587 patent, claim 36 is an exact copy of claim 2, and claim 38 is an exact copy of claim 19. Claim 37 is substantially identical to claim 5 of the '587 patent, except that the "means for applying" current to the pump during the electroplating process is not limited to applying a "pulsed" current. Applicants disclose, at p. 27, line 11, of the present application that the pump used in the disclosed apparatus maybe driven by an electric pump motor. Electric motors require electric current to run. Therefore, Applicants' disclosure is broader than the '587 patent in that it is not necessarily limited to operating the electric pump motor using pulsed currents. Because Applicants do not specifically describe the pulsed current of claim 5 of the '587 patent, claim 39 of the present application omits the "pulsed" aspect of the current as an unnecessary limitation for the purposes of an interference.

Each of the foregoing claims 35 to 38 are supported in the present application. The following tables set forth precisely how the specification of the present application supports each of the following claims.

35. An electroplating device for wafer metallization of a wafer for interconnection comprising:	Figure 1; page 7, lines 1-3, "FIG. 1 is a schematic block diagram of a plating system, shown generally at 50, for electroplating a metallization layer, such as a patterned copper metallization layer, on, for example, a semiconductor wafer 55."; Figures 6 and 7; page 14, lines 15-17, "Various other reactor apparatus configurations are also suitable for use with one or more of the external electrode configurations discussed above. One such

	reactor is shown in Figures 6 and 7."; Figure 8; page 20, lines 1-2, "A further electroplating processing station that may use one or more external electrodes for in-situ cleaning of the wafer electrode contacts is illustrated in Fig. 8."
a reservoir for electrolyte,	Fig. 8; page 20, lines 2-4, "The two principal parts of processing station 900 are the wafer rotor assembly, shown generally at 906, and the electroplating bowl assembly 303."; page 21, lines 2-3, "Process fluid is provided to the cup through fluid inlet line 325 and proceeds therefrom through fluid inlet openings 324. The plating fluid then fills the chamber 904 through openings 324 as supplied by a plating fluid pump (not shown) or other suitable supply."
a holder adapted to hold the wafer above said reservoir,	Fig. 8; page 22, lines 16-17, "The wafer rotor assembly 906 holds a wafer W for rotation within the processing chamber 904."
a counter-electrode in said reservoir,	Fig. 8; page 21, lines 18-21, "In preferred use of the apparatus for electroplating, the anode 334 is a consumable anode used in connection with the plating of copper or other metals onto semiconductor materials. The specific anode will vary depending upon the metal been plated and other specifics of the plating liquid being used."
means adapted for passing current between said counter-electrode and the wafer in said holder,	Fig. 8; page 22, lines 17-21, "The wafer rotor assembly 906 includes a rotor assembly 984 having a plurality of wafer-engaging fingers 979 that hold the wafer against features of the rotor. Fingers 979 are preferably adapted to conduct current between the wafer and a plating electrical power supply and may be constructed in accordance with various configurations to act as current thieves."
a pump adapted for pumping electrolyte from said reservoir against the wafer in said holder,	Page 21, lines 2-3, "Process fluid is provided to the cup through fluid inlet line 325 and proceeds therefrom through fluid inlet openings 324. The plating fluid then

	fills the chamber 904 through openings 324 as supplied by a plating fluid pump (not shown) or other suitable supply."; p. 27, lines 3-11, "To provide process fluid to the process bowl assembly in the electroplating module, the module is advantageously provided with fluid transfer equipment. The fluid transfer equipment is provided to draw process fluid from a reservoir, supply it to the process bowl assembly, and return it to a common collection point. The equipment may include an immersible pump which is mounted in a reservoir. The reaction chamber may be provided with such a pump, which further comprises a fluid suction or pump suction hitch that draws process fluid from the reservoir. The immersible pump pumps fluid by pump suction into the pump body and out through the fluid discharge or pump discharge. The immersible pump is preferably driven by an electric pump motor."
a non-conducting porous separator between said wafer holder and said counter-electrode.	Fig. 8; page 21, line 23 through page 22, line 2, "Fig. 8 also shows a diffusion plate 375 provided above the anode 334 for providing a more even distribution of the fluid plating bath across the wafer W. The fluid passages are provided over all or a portion of the diffusion plate 375 to allow fluid communication therethrough."

36. An electroplating device for wafer metallization of a wafer for interconnection comprising:	Figure 1; p. 7, lines 1-3, "FIG. 1 is a schematic block diagram of a plating system, shown generally at 50, for electroplating a metallization layer, such as a patterned copper metallization layer, on, for example, a semiconductor wafer 55."; Figures 6 and 7;page 14, lines 15-17, "Various other reactor apparatus configurations are also suitable for use with one or more of the external electrode configurations discussed above. One such reactor is shown in Figures 6 and 7."; Figure 8; page 20, lines 1-2, "A further electroplating processing station that may use one or more external electrodes for in-situ cleaning of the wafer electrode contacts is illustrated in Fig. 8."

a reservoir for electrolyte,	Fig. 8; page 20, lines 2-4, "The two principal parts of processing station 900 are the wafer rotor assembly, shown generally at 906, and the electroplating bowl assembly 303."; p. 21, lines 2-3, "Process fluid is provided to the cup through fluid inlet line 325 and proceeds therefrom through fluid inlet openings 324. The plating fluid then fills the chamber 904 through opening 324 as supplied by a plating fluid pump (not shown) or other suitable supply."
a holder adapted to hold the wafer above said reservoir,	Figure 8; page 22, lines 16-17, "The wafer rotor assembly 906 holds a wafer W for rotation within the processing chamber 904."
a counter-electrode in said reservoir, said counter-electrode disposed concentrically with said holder,	Figure 8; page 21, lines 18-21, "In preferred use of the apparatus for electroplating, the anode 334 is a consumable anode used in connection with the plating of copper or other metals onto semiconductor materials. The specific anode will vary depending upon the metal being plated and other specifics of the plating liquid being used."
means adapted for passing current between said counter-electrode and the wafer in said holder,	Figure 8; page 22, lines 17-21, "The wafer rotor assembly 906 includes a rotor assembly 984 having a plurality of wafer-engaging fingers 979 that hold the wafer against features of the rotor. Fingers 979 are preferably adapted to conduct current between the wafer and a plating electrical power supply and may be constructed in accordance with various configurations to act as current thieves."
a pump adapted for pumping electrolyte from said reservoir against the wafer in said holder, and	p. 21, lines 2-3, "Process fluid is provided to the cup through fluid inlet line 325 and proceeds therefrom through fluid inlet openings 324. The plating fluid then fills the chamber 904 through opening 324 as supplied by a plating fluid pump (not shown) or other suitable supply."; page 27, lines 3-11, "To provide process fluid to the process bowl assembly in the electroplating module, the module is advantageously

wherein the diameter of said counter-electrode is smaller than the diameter of said wafer holder.	provided with fluid transfer equipment. The fluid transfer equipment is provided to draw process fluid from a reservoir, supply it to the process bowl assembly, and return it to a common collection point. The equipment may include an immersible pump which is mounted in a reservoir. The reaction chamber may be provided with such a pump, which further comprises a fluid suction or pump suction hitch that draws process fluid from the reservoir. The immersible pump pumps fluid by pump suction into the pump body and out through the fluid discharge or pump discharge. The immersible pump is preferably driven by an electric pump motor." Fig. 8 - visual comparison of the wafer rotor assembly 906 and the anode 334 illustrates the fact that the diameter of the anode is smaller than the diameter of the wafer holder

37. An electroplating device for wafer metallization of a wafer for interconnection comprising:	Figure 1; p. 7, lines 1-3, "FIG. 1 is a schematic block diagram of a plating system, shown generally at 50, for electroplating a metallization layer, such as a patterned copper metallization layer, on, for example, a semiconductor wafer 55."; Figures 6 and 7;page 14, lines 15-17, "Various other reactor apparatus configurations are also suitable for use with one or more of the external electrode configurations discussed above. One such reactor is shown in Figures 6 and 7."; Figure 8; page 20, lines 1-2, "A further electroplating processing station that may use one or more external electrodes for in-situ cleaning of the wafer electrode contacts is illustrated in Fig. 8."
a reservoir for electrolyte,	Fig. 8; page 20, lines 2-4, "The two principal parts of processing station 900 are the wafer rotor assembly, shown generally at 906, and the electroplating bowl assembly 303."; p. 21, lines 2-3, "Process fluid is provided to the cup through fluid inlet line 325 and proceeds therefrom through fluid inlet openings 324. The plating fluid then fills the chamber 904 through opening 324 as supplied by a plating fluid pump (not shown) or other suitable supply."
a holder adapted to hold the wafer above said reservoir,	Figure 8; page 22, lines 16-17, "The wafer rotor assembly 906 holds a wafer W for rotation within the processing chamber 904."
a counter-electrode in said reservoir,	Figure 8; page 21, lines 18-21, "In preferred use of the apparatus for electroplating, the anode 334 is a consumable anode used in connection with the plating of copper or other metals onto semiconductor materials. The specific anode will vary depending upon the metal being plated and other specifics of the plating liquid being used."
means adapted for passing current between said counter-electrode and the wafer in said holder,	Figure 8; page 22, lines 17-21, "The wafer rotor assembly 906 includes a rotor assembly 984 having a plurality of wafer-engaging fingers 979 that hold the wafer against features of the rotor. Fingers 979 are preferably adapted to conduct current

	between the wafer and a plating electrical power supply and may be constructed in accordance with various configurations to act as current thieves."
a pump adapted for pumping electrolyte from said reservoir against the wafer in said holder, and	p. 21, lines 2-3, "Process fluid is provided to the cup through fluid inlet line 325 and proceeds therefrom through fluid inlet openings 324. The plating fluid then fills the chamber 904 through opening 324 as supplied by a plating fluid pump (not shown) or other suitable supply."; page 27, lines 3-11, "To provide process fluid to the process bowl assembly in the electroplating module, the module is advantageously provided with fluid transfer equipment. The fluid transfer equipment is provided to draw process fluid from a reservoir, supply it to the process bowl assembly, and return it to a common collection point. The equipment may include an immersible pump which is mounted in a reservoir. The reaction chamber may be provided with such a pump, which further comprises a fluid suction or pump suction hitch that draws process fluid from the reservoir. The immersible pump pumps fluid by pump suction into the pump body and out through the fluid discharge or pump discharge. The immersible pump is preferably driven by an electric pump motor."
means for applying a current to said pump during the electroplating process.	p. 27, line 11, "The immersible pump is preferably driven by an electric pump motor". Electric motors require electric current to run.

38. An electroplating device of wafers for interconnection comprising:	Figure 1; p. 7, lines 1-3, "FIG. 1 is a schematic block diagram of a plating system, shown generally at 50, for electroplating a metallization layer, such as a patterned copper metallization layer, on, for example, a semiconductor wafer 55."; Figures 6 and 7;page 14, lines 15-17, "Various other reactor apparatus configurations are also suitable for use with one or more of the external electrode configurations discussed above. One such reactor is shown in Figures 6 and 7."; Figure 8; page 20, lines 1-2, "A further electroplating processing station that may use one or more external electrodes for in-situ cleaning of the wafer electrode contacts is illustrated in Fig. 8."
a reservoir for electrolyte,	Fig. 8; page 20, lines 2-4, "The two principal parts of processing station 900 are the wafer rotor assembly, shown generally at 906, and the electroplating bowl assembly 303."; p. 21, lines 2-3, "Process fluid is provided to the cup through fluid inlet line 325 and proceeds therefrom through fluid inlet openings 324. The plating fluid then fills the chamber 904 through opening 324 as supplied by a plating fluid pump (not shown) or other suitable supply."
a holder adapted to hold a wafer above said reservoir,	Figure 8; page 22, lines 16-17, "The wafer rotor assembly 906 holds a wafer W for rotation within the processing chamber 904."
a counter-electrode in said reservoir,	Figure 8; page 21, lines 18-21, "In preferred use of the apparatus for electroplating, the anode 334 is a consumable anode used in connection with the plating of copper or other metals onto semiconductor materials. The specific anode will vary depending upon the metal being plated and other specifics of the plating liquid being used."
means for passing current between said counter-electrode and a wafer in said holder,	Figure 8; page 22, lines 17-21, "The wafer rotor assembly 906 includes a rotor assembly 984 having a plurality of wafer-engaging fingers 979 that hold the wafer

	against features of the rotor. Fingers 979 are preferably adapted to conduct current between the wafer and a plating electrical power supply and may be constructed in accordance with various configurations to act as current thieves."
a pump for pumping electrolyte from said reservoir against said wafer, and	p. 21, lines 2-3, "Process fluid is provided to the cup through fluid inlet line 325 and proceeds therefrom through fluid inlet openings 324. The plating fluid then fills the chamber 904 through opening 324 as supplied by a plating fluid pump (not shown) or other suitable supply."; page 27, lines 3-11, "To provide process fluid to the process bowl assembly in the electroplating module, the module is advantageously provided with fluid transfer equipment. The fluid transfer equipment is provided to draw process fluid from a reservoir, supply it to the process bowl assembly, and return it to a common collection point. The equipment may include an immersible pump which is mounted in a reservoir. The reaction chamber may be provided with such a pump, which further comprises a fluid suction or pump suction hitch that draws process fluid from the reservoir. The immersible pump pumps fluid by pump suction into the pump body and out through the fluid discharge or pump discharge. The immersible pump is preferably driven by an electric pump motor."
a distributor positioned in said reservoir including a disk having a plurality of holes adapted to provide a flow of electrolyte through the disk that is uniform along a radius of the disk.	Fig. 8; page 21, line 23 through page 22, line 2, "Fig. 8 also shows a diffusion plate 375 provided above the anode 334 for providing a more even distribution of the fluid plating bath across the wafer W. Fluid passages are provided over all or a portion of the diffusion plate 375 to allow fluid communication therethrough."

In light of the clear support for claims 35 to 38 in this application, Applicants respectfully request that an interference be declared between this application and the '587 patent. The '587 patent bears a filing date of October 19, 1998, whereas the

present application has an effective filing date of January 6, 1998. Thus, Applicants are senior to the inventors of the '587 patent and should be designated as senior party. Under 37 C.F.R. §1.607, Applicants suggest the following proposed Count.

COUNT

An electroplating device for wafer metallization of a wafer for interconnection comprising:

a reservoir for electrolyte,

a holder adapted to hold the wafer above said reservoir,

a counter-electrode in said reservoir,

means adapted for passing current between said counter-electrode and the wafer in said holder,

a pump adapted for pumping electrolyte from said reservoir against the wafer in said holder,

a non-conducting porous separator between said wafer holder and said counter-electrode.

The foregoing proposed Count is identical to claim 35 and to claim 1 of the '578 patent. Similarly, claims 36 –38 of the present application correspond exactly to 25 and 19 of the '587 patent. Thus, claims 36-38 of the present application should be designated as corresponding to the Count. Similarly, claims 2-37 of the '587 patent should also be designated to corresponding to the Count.

Respecting that latter point, the remaining claims of the '587 patent are, Applicants believe, patentedly indistinct from claim 1 of the '587 patent and the proposed Count of the proposed interference. Establishing that claims 2-37 of the '587 patent are not patentedly distinct is the prosecution history of the '587 patent in which various

claims which issued in the '587 patent were never the subject of restriction or election requirements during prosecution.

In sum, the prosecution history constitutes an admission by the inventor thereof that the various independent claims are not patentedly distinct one from the other.

Accordingly, Applicants respectively request that an interference be cleared forth with. A notice to that effect is respectively submitted.

Respectfully submitted,

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